

My Friendship with D. D. Kosambi

Daniel H.H. Ingalls

That two such different persons as D. D. Kosambi and I should have become friends is remarkable. But Kosambi was a remarkable man. I should like to share my memory of him, but I despair of sketching his personality in the brief compass of an article. Instead, I shall let Kosambi, for the most part, tell how the friendship arose. By quoting from his early letters to me, as occasionally interrupted by summaries or fragments of my letters to him, the reader may feel something of the biting satire, the passionate energy, and the abiding scholarship of my late friend.

My first letter from Kosambi was in response to a review that I had written of his book *The Epigrams Attributed to Bhartrhari*. His letter began with thanks, proceeded, despite his disclaimer, to pounce on one of the points where he disagreed with me, and ended with a characteristic flash of ridicule.

Bombay, January 6, 1951

Dear Dr Ingalls,

Many thanks for the most sympathetic and even flattering review of my Bhartrhari, which came yesterday. I shall not join issue with you on the points where we differ, but one day, if you study the background of Sanskrit literature in its social and historical context, I think you will come to much the same conclusions as mine. Incidentally, "office-seeker" bears a connotation (to my foreign ear) which I should not apply to Bhartrhari. ...He was a man without regular means of livelihood, or regular course of action that would qualify him for one. Davour of kings in that period, their patronage, meant reward but not office; at least, not for a poet who wasn't much else.

... In any case is extremely gratifying to find anyone who takes the trouble to go so carefully through both text and preface! Accept my thanks for the good words.

... There are many supplementary discoveries and additions that will need a paper by themselves.... The Udaipur kings did not read all of Bharatihari so carefully as the *sringara* part and the bound codex naturally opened to a worn page of the *Anangaranga*'s section on the aphrodisiacs. Draw your own conclusions !

Yours sincerely,
D.D. Kosambi

Our correspondence continued. Kosambi thanked me for a book of mine. He wrote asking about his father's posthumous *Visuddhimagga*, which after years of delay had appeared in the Harvard Oriental Series just two weeks before the date of his enquiry. Later, when our acquaintance had ripened into friendship,

Kosambi was often to speak to me of his father. Dharmanand Kosambi had lived for some years in America in the course of an extraordinary journey in pursuit of truth that took him on the circuit of the globe. He had returned to Maharashtra a Buddhist, who by his forceful writings inspired those who were intellectually strong and antagonized those who wanted their *sanatana dharma* without intellectual effort. D. D. Kosambi always expressed an intense admiration of his father. He felt that his father had been mistaken in the goal of quietism that he chose; the son chose a far different goal. But the passion for the search and the scorn of non-searchers were common to both men.

It was because of the father's sojourn that the son had taken his high school and college education in the United States. Why Kosambi failed to go on to the doctorate he explained in a letter where he first suggested that we drop our titles in writing each other. The letter also refers to the plan I was forming of spending the year, from June onward, in India.

Bombay, February 14, 1957,

Dear Ingalls, .

Let us agree to drop the formalities, particularly as I never achieved the doctorate with which you regularly credit me. I had to work my way through Harvard and took the bachelor's degree in February 1929, giving up the attempt to get on with my formal education in May 1929, for the depression was about to break and casual jobs were vanishing before the debacle. Incidentally, I had no fellowship either, being "interested in too many things", not to speak of my uncouth appearance, rude manners, and the rest. This preamble is for your private information.

I should be sorry if you left India without our being able to meet. June is the last month of our holidays, so that I should-in the normal course of events- be back here on July 1. My programme is very simple in that I arrive from Poona on Monday mornings if Monday is a working day and leave again on Friday evening. The week-ends at Poona give me time to do some thinking, while the five working days at Bombay are spent mostly on "scientific" pursuits. ...

[Most of the holidays] I again spend at Poona, though I make two trips of a fortnight every year to Bangalore where my mother is spending the final years of her life. ...

It was some time before this that I had suggested that Kosambi edit for the Harvard Oriental Serics Vidyakara's *Subhasitaratnakosa*, the oldest of the great anthologies of Sanskrit verse. He and V. V. Gokhale had ascertained that this collection contained several verses of the Bhartrhari canon. At first they had photographs of only one manuscript of the anthology. These photographs, taken by Rahula Sankrityayana at the monastery of Ngor in Tibet, crowded so many pages onto a single plate that they were almost indecipherable. Soon Kosambi found a library listing of a second manuscript in Kathmandu; then it was reported that Professor Tucci in Rome had a second set of photographs of the Ngor

manuscript. Kosambi had accepted my invitation to edit the work on the condition that V. V. Gokhale be made joint editor.

Now my interest in the anthology was mounting, and with it my eagerness to see Kosambi and examine the photographs at first hand. So my original plan of basing my Indian visit on Calcutta, where I had lived many years before, gradually changed to a plan of staying for the greater part of my time in Poona. Kosambi offered me advice on my preparations at the very moment that he was preparing for a strenuous but brief trip of his own to China. He hoped to get the Ngor manuscript of our text from Tibet through Chinese mediation, but the main object of his trip was connected with the Chinese Peace Committee. I was interested in the first object and disapproved silently of the second.

Poona, May 17, 1952

Dear Ingalls,

Yours of the 12th just received. ...

I told you of my hopes of getting something directly from China. Unfortunately, I had to refuse an invitation to China last year, and may have to repeat the performance now. I am supposed to fly not later than a week from today, at the invitation of the Chinese Peace Committee. The Prime Minister informs me through his First Secretary that there will be no obstacle in my way *but* (and the real reply begins always after such a "but") the others whom I am supposed to lead in a delegation of three will not be allowed. In addition, it is made unmistakably clear that the PM would be very happy to see me refuse. I have asked him to re-consider; if he refuses, I shall have to stay back in protest. Going alone is still a possibility, but to tell you the truth I hate travelling and do not want to go just for the MS. In the Peace Movement we put the Movement first and work as sincerely as possible in spite of all sorts of filth thrown at us by enemies. You see the difficulty, namely that a MS is not likely to be located in distant Tibet for one who refuses invitations again and again.

However, I shall try by letter. The last letter was lost by the agent, and this one may be too. Your decision to come to Poona will be, I think, wiser than the former one. As you know, your Embassy keeps close tabs on most U.S. citizens here and will not be too happy if you advertise your association with me. [Ed. note: the U.S. Embassy never paid me the slightest heed.] But you can count on me for whatever help you need. ... You should write immediately. ..and ask for full access to the facilities of the Bhandarkar Oriental Research Institute and also for a suite of rooms at the **BORI** Guest House. They are tolerable and I can always help out as I live nearby. .

The letter continued with thumb-nail sketches of various scholars :

X, a windbag. Y works hard but has sacrificed what ability he had to his cupidity and dishonesty, as well as arrogance. ...Z has now only one trade of which he still preserves any mastery, namely, sliding out of obligations once the maximum advantage has been secured.

These bursts of scorn were followed by expressions of admiration for others:

However, you can find less well advertised but far better people even in Poona, as I have told you. Gode does fine work. ...at the BORI, and is in charge of the MSS. I have already written to you about Gokhale, who could also help you with the Bengali. ...At Madras Raghavan's great *Catalogus Catalogorum* deserves your attention, as does Raghavan himself, one of the absolute masters of classical Sanskrit in India and one of the best-read men in Sanskrit I have met. There are many other people and places you should visit, but that can come after you arrive.

If, by some miracle, I get off to China next week, I shall be back in harness by July 1. Of course, I may be dismissed one of these days for daring to think that public opinion should be mobilized for Peace, even in my spare time. But then I shall have all the more time to devote to research. ...

Five weeks later Kosambi had been to and returned from China. He wrote me to Calcutta, where I had arrived and was stopping over briefly. After advice on the further stages of my trip, he reported on his own. Not a word of the hoped-for manuscript; but his enthusiasm was running strong on China.

China was a revelation in many ways. The Peace Movement has two classes of delegates, tourists and workers. I was in the latter. In spite of the lack of time for sightseeing, and even for sleep, I managed to see Chin K'e-mu, Dschi Hian-Jin (*Mahavastu* specialist), and other scholars; only the two above are Sanskritists, but the rest were impressive. The whole university atmosphere is strange to any of us who have been trained in Europe, the U.S.A., or India. Incidentally, there are not many students now for Sanskrit, but interest in modern Indian languages is rising fast. Hindi classes are popular.

The most impressive thing about China is the total change of character after the liberation: people do not bother to lock up houses at night any longer and nothing is missing. The coolie stands up and exchanges smiles with the policeman. Using the same old hand methods, land yield on the same plots has risen by twenty per cent; buildings rise up in half the time. Sanitation is greatly improved and the country well ahead of India in all ways. You can still see old China-at Hong Kong!

His last letter before we met reached me in Madras.

Bombay, July 21, 1952 Dear Ingalls,

It is clear that you are in India and will come to Poona via Madras, not via Bombay as I expected. My house is less than a furlong away from the BORI Nizam Guest House and my wife will supply you with any urgent necessities that we possess but which happen to be absent in the Guest House. I myself hope to be back the night of the 24th, Thursday. In case you call at our place before then, *beware of the dog*. He belongs to the neighbours, but has adopted us. His ear-shattering bark, unfortunately, is no worse than his bite. ...

Yours sincerely,
D. D. Kosambi

There followed four months during which I saw Kosambi nearly every week-end. I puzzled with him and Gokhale over the text of the anthology. I took no hand in its editing, but the three of us decided "that it must be annotated and for that

purpose I was chosen. As matters turned out, years later, the annotation grew into a translation; but in 1952 I was not thinking so far ahead. Most of my time with Kosambi was spent in talking of matters that were miles removed from our common endeavour. We would take all day hikes over the hills about Poona and comi.l".1e our conversation in the courtyard of his house, on through supper into the night.

I have never met a man with whom I disagreed on such basic questions, yet whose company I so constantly enjoyed. Kosambi was a Marxist; I am an anti-systematist and by nature conservative. Kosambi insisted that art should be subservient to social betterment; I that it must break away from political subservience in order to be art. Curiously, we loved many of the same books, often for quite different reasons, and when we found our taste to converge we found it to be strengthened. At least it was so with me; I think it was so with Kosambi also. Blake's *Milton* had always affected me by its brilliant images :

*Bring me my bow of burning gold !
Bring me my arrows of desire!*

The poem has affected me more deeply since my discovery that it was Kosambi's favourite. Kosambi, of course, loved it for its leading up to the revolutionary conclusion :

*Nor shall my sword sleep in my hand
Till we have built Jerusalem
In England's green and pleasant land.*

But there must have been more than poetry to bring us together. Each of us found in the other certain qualities that he valued. Again, I can speak with certainty only of my own view. What I admired in Kosambi was his instinctive respect for facts, I would almost call it a reverence, that would come into play even when I least expected it. To listen to him theorize on Indian history you might think that he believed himself to have a complete understanding of its every turn. But no; he still had the patience to weigh on a jeweller's scale each new lot of punch-marked coins that came into his hands; he would still worry for hours over which of five manuscript variants to choose for a critical text. This side of Kosambi's character, the truly scholarly side, made no great flash in the world. Most of his acquaintances, I think, regarded it as a foible. But to Kosambi it was part of his inner morality and he was comfortable with other scholars only when he saw something of the same reverence in their hearts.

I recall my departure from Poona. Kosambi rode with me down to Bombay on the "Deccan Queen". I, the American capitalist, had never travelled in India by

other than second class fare. My Marxist friend insisted that I join him in his first class compartment.

For two years after my return to America letters passed between us nearly every week. Most of them concerned the text of the anthology, the difficulty of getting new photographs, and the problems of getting the text set up at the Nirnaya Sagar Press in such fashion that it could be reproduced by offset in America. But often we would throw in a paragraph or two on other affairs and sometimes a whole letter. The following was occasioned by a letter of mine giving news of my permanent appointment at Harvard and complaining of how an application for a research grant which I had supported had been turned down.

Bombay, May 23, 1953

Dear Ingalls,

Yours of the 16th reached me last night. Let me hasten to congratulate you, and even more Harvard University, on your permanency. It is not likely they can get anyone else for a job like yours and you will carryon with credit. ... As for your doing anything un-American during the next thirty years, I have grave doubts; learning Sanskrit as well as you have is un-American enough for one lifetime.

What you say about the grant comes painfully home in several ways. Our fertile but whimsical *kamadhbenu*, the government, can be milked for streams of cash if one does it on a sufficiently large and useless scale. The man who needs 500 for some really useful work is a common swindler; a scheme for 10,000 might get through with heavy backing. In the hundred thousands it becomes routine; and by the million, you not only get everything you ask for, but are certainly a public benefactor, provided the money all goes down the drain.

The letter ends by complaining of a visiting American historian:

In three hours of cross-examination I could not get a solitary definite statement from him on any point in the history of India of any period. Your country *does* need some real propaganda to counteract this kind, just as we need a lunatic asylum for curing most of our lads who want to go to America.

Toward the end of 1953 an argument arose between Kosambi and me that I feared might undo our joint undertaking and destroy our recent friendship. As events proved, the undertaking, as concluded, and the friendship ripened into maturity.

Kosambi had begun writing his Introduction to Vidyakara's anthology. He sent it to me in two instalments. With the first instalment of four sections I was delighted, for he had managed to ascertain Vidyakara's date and place with accuracy, and by this means was able to assign dates for the first time to a number of Sanskrit authors whose verses the anthology contained. He warned me on November 5th that "the next four sections, mailed to you from Bombay this morning by air, will appear less agreeable to you than the first". His fore-boding

proved correct, not because of the Marxist theory of Sanskrit literature which he there set forth- I was prepared for that- but because of the passionate denunciations of non-Sanskrit literature into which he digressed.

In this first draft I found on pages 16 to 18 a diatribe against the detective stories of Mickey Spillane, which Kosambi took as typifying the decadence of a socially destructive United States. In a footnote he had added the comment: "I am told that his books were made compulsory reading for the Army at one time, to inculcate the true martial spirit of an atomic age, which de-fends human values by mass extermination."

I replied by a long letter of criticism. I was willing to print any theory of literature that he wished to frame, but I insisted that "the fireworks must come out". As slightly abbreviated the conclusion of my letter was as follows :

As regards compulsory reading in the U.S. Army, I served in the Army for three years and never heard of compulsory reading. Actually it was my impression that a good many of my fellow soldiers were unable to read. Be this as it may, it does not raise the credibility of a scholarly text to have such bits of propaganda dropped around in the Introduction. Again. the diatribe against Mickey Spillane fails to produce the effect you wish. It reads like a Jain pamphlet on the horrors of fox-hunting.

It may appear curious to you that I should take exception to one passage rather than another in this last instalment. Certainly most of my colleagues, if they were asked, would say: "You're already printing a communist interpretation. What more is there to stop at?" For every day more of us fall into this antinomy. Here it is communism or truth. And in the other half of the world it is communism or falsity. Perhaps it is a Quixotic gesture to swim against this stream, but I intend to do so.

A week later I heard from Kosambi: "Your blast of the 21st was waiting for me at home last night." After countering most of my objections he rephrased my conclusion :

Let us put it as follows: The world is divided into three groups: (1) swearing by Marxism, (2) swearing at Marxism, (3) indifferent, i.e. just swearing, but forced by the crisis to shift to 1 or 2. I belong to 1, you and your colleagues to 2. Under the circumstances, what is the most effective draft of the Introduction to be?

I have no intention of propagandizing (for which there would be far better media, surely) nor of changing my line. The point, however, is not to prove Marxism or support it, but to use a certain well-proved line of approach to draw conclusions from such meagre evidence as exists.

But on the passage I had cried out against most vehemently he did not insist.

Pages 16-18 are the real sore point, as far as I can see. They can be rewritten, and shall be rather than argue the matter out here. Incidentally, page *three* will receive: an added paragraph, for the *jatirajya* grows upon me with better understanding of its stanzas.

We both loved the *jatirajya*, the section of the anthology that furnishes those inimitable miniatures of village and field in ancient India. As I look back it seems to me that the sober vision of the Pala poets forced a corresponding sobriety upon us. Kosambi agreed to give up the fireworks; I agreed that he might print whatever social message he could elicit from the Sanskrit poetry. Such minor flares as "one may see this for himself in the new China" I allowed to stand.

I find only one recurrence of disagreement between us about the Introduction, but it was mild. For its history I have only Kosambi's plea without a copy of my reply. Some of his words are worth saving for the picture they give of what he admired and what he hated.

On revisions, page 5, line 4 from bottom, about control of the press: would you agree to a footnote about press, mass-produced magazines, comics, radio, television? I see no reason why a television, radio, or movie script should not be as good literature as anything Shakespeare wrote. Yet, in all my experience, the sole occasion on which the chance was taken was the movie *Juarez* and in particular the scenes, in the first of which Juarez (Paul Muni) defines democracy to Porfirio Diaz and in the second Juarez addresses the ambassadors who suggest that Maximilian be pardoned in the name of mercy and civilization. Magnificently acted, the words by themselves had a rugged simplicity which could have fitted into anything from classical antiquity down and graced the context. Now is it only a degraded popular taste which reduces great works of literature to comics! Who controls the outfit? I recall a take off in *Punch* some years ago which gave *Macbeth* as a U.S. style comic, and though it must have seemed funny to the educated British conservative who usually appreciates *Punch* humour, it was exactly what a publisher of comics would have published without thinking that anything was wrong. The real cause of the ruin seems to me the position of advertising and there is no question of who controls that. ...What should be said here? I feel that something must be said in any case. ...Draft your own version of what I mean.

I was not quite sure whether Kosambi was pulling my leg-- forcing me to reply to an argument where he knew that my prejudices would agree largely with his own-- or whether he was ingenuous. There was no doubt, at least, of the depth of his feeling or of the cleanliness of his scorn. I could only reply that the matter was not pertinent to an edition of a Sanskrit text.

For the rest we worked smoothly, distinguishing our scholarship from our emotional involvements. A year and a half later the Introduction was finished, the printing of the text was nearing completion, and I had begun to transform my annotations into a translation.

If the year 1955 was a happy one for the anthology, it was far from happy for Kosambi in other respects. The arthritis, from which he had suffered for several years, worsened. The ailment was not only painful but infuriating, for Kosambi had a strong physique which he had always pushed to the utmost. Among his keenest pleasures had been the long hikes over the Poona hills. The hikes were now curtailed. The hand of sickness stretched farther, to two of the persons he loved most dearly. In 1955 his mother died. His sister, falling ill, was to be taken from him the next year. Amid these grief's Kosambi's energy drove him as hard as ever. In the summer he left for Finland and Russia. He was away for two months and my letters to him accumulated at Poona. He wrote me directly after his return.

Poona, August 13, 1955

Dear Ingalls,

I got back this morning from Helsinki and Moscow. The USSR Academy of Sciences had invited me last year, as you know. This year the invitation was especially repeated at Helsinki and I went off to attend their conference on atomic energy for peaceful uses. They have actually begun and have had a 5,000 kilowatt power station in operation, the current being used for household supply as well as Industry, for over a year. Thereafter I gave a couple of lectures on various Indological subjects and got my medical treatment. The treatment was long overdue and at the end gave a lot of relief, though not a complete cure as yet.

All this sounds more impressive than it was. Small matters are not so well organized in the USSR as the big projects. The people are fundamentally easy-going, even slip-shod, just like us Indians, though very nice. The war has left a mark upon every family that I managed to meet: the people as well as their government really desire peace. But for all that, my personal affairs were in a mess. All the scholars were on holiday, summer vacations having begun.

Even so, the orientalists came back to hear my lectures, the last of which was held on their foundation anniversary. They were rather shaken by the harsh things I had to say about their pseudo-Marxist scholars (or pseudo-scholars), but the persons concerned to whom I finally tracked down most of the nonsense emanating from the Oriental Institute were not quite convinced; one ended on a note of personal abuse, saying to friends in private conversation that Kosambi's Marxism was only skin-deep. This meant a lack of argument against the specific, defects that I had to point out in public sessions. I could only reply that I had a pretty thick skin; perhaps I was all skin.

In any case, the Sanskritists in the old line are all dead and the continuity has been broken. They were mostly based upon Leningrad, where I hadn't time, strength, or inclination to go. Only Kalyanov is left, the rest being quite new to the game and rather poor in calibre from their own accounts. However, they are interested in Indology and if they turn their mind to it with their characteristic national energy might sweep the field once again. At present they don't even know what is being done in other countries. My own reprints had not reached the proper scholars nor the libraries when I went there. Some of these reprints and the Bhartrhari edition had lain unnoticed for five years with the biochemist who had agreed to take them from India. I called on him and recovered them. Finally, there isn't a library I could get at with the resources and ease of use of Widener [i.e. the Harvard College Library]. What wouldn't I give, except giving up the Peace Movement, to spend a few months working away at Widener again!

Gokhale will call tomorrow. He has sent all your notes and letters to be here with Maya, I except the last loo stanzas on which he is still working. Studying the dossier, it seems that you have reached agreement on most points, while I have gotten very badly out of touch with the work. However, getting back into harness shouldn't be too difficult. ...

I am grateful for the condolences. It was painful not to be present when Mother passed away, but the journey, though physically just possible would in fact have been killing for me too.

Shall we drop the remaining formality now and come to the real personal names on both sides. You have been signing yourself as Dan. I am, to my few friends, Baba.

I have proposed here to describe only the forming of a friend, I should be ungrateful, however, not to add a word on benefit I received from it, for Baba was to become the best critic I ever had. From 1956 onward the pattern of the criticism our letters was reversed: where I had been criticizing his introduction and text; he was now criticizing the drafts of my translation. I valued his praise as actors are said to value acclaim in the city of Boston; if they can get a round of applause in a Boston theatre, they figure on a full year's run anywhere. And I benefited from his ridicule, for Baba was as cruel to my occasional flights of mysticism as I had been to his Marxist gressions. My nature did not change under criticism any more than his did; but my style was chastened. In all the years we each other we never came to agree on theory. We agreed, however, well enough on the meaning of a phrase that I find each of us using in letters that happened to cross: "an honest job, well done". I had said it of his finished text; he had expressed it as his hope of what my infant translation would become

"Baba" A PERSONAL TRIBUTE

A.L. Basham

I first met D. D. Kosambi during the 1949-50 university session, when I had been a lecturer at London for only a year or two and had much to learn. One cold day in autumn or winter (I forgot which), a tall spare Indian with greying hair and rugged but pleasant features came into my room at the School of Oriental and African Studies. He introduced himself as D. D. Kosambi, who had come to

London partly to meet mathematicians and partly to discuss his researches on Indian punch-marked coins with the numismatists at the British Museum. His stay in England on that occasion was a very brief one, but I had several long talks with him, and arranged for him to give a lecture to my students. From that time onward we kept up our friendship, meeting whenever possible, whether in India or in England, and exchanging fairly frequent letters. I have met no one who could crowd so much information into an air letter as he, partly by typing right up to the edges of the paper and partly by extreme conciseness of expression.

We argued a great deal. I did not go all the way with him in his Marxist interpretation of Indian history, though I agreed with many of his conclusions; and when, early in the course of our friendship, I published a lengthy review of his *An Introduction to the Study of Indian History* (Bombay, 1956) in which I criticized some of his theories (rather sarcastically) I feared reprisals; but he accepted my remarks without rancour, and our friendship was in no way impaired. Whenever I was in the neighbourhood of Bombay I would visit him in his home in Poona, and, armed with a special stick which was equipped with a chisel-shaped point for prizing microliths out of the earth, he would take me and his dog Bonzo for long walks in the beautiful rolling countryside, introducing me to village shrines and sacred trees, and discussing their significance, as survivals of the prehistoric culture of the Deccan. In the last few years of his life he often complained of arthritic pain, but it rarely deterred him from his walks in search of microliths or from working in his study until the early hours of morning.

At first it seemed that he had only three interests, which filled his life to the exclusion of all others- ancient India, in all its aspects, mathematics and the preservation of peace. For the last, as well as for his two intellectual interests, he worked hard and with devotion, according to his deep convictions. Yet as one grew to know him better one realized that the range of his heart and mind was very wide. He had a great love of literature in all languages. Once he impressed me by quoting passages from John Bunyan's *Pilgrim's Progress* from memory. I was surprised that he should know this seventeenth century English religious classic so well, and suggested that his taste for Bunyan was rather incongruous in a professed unbeliever. He replied that he loved Bunyan because his language was so beautiful and simple, he was a product of the popular culture of the time, and he imparted valuable moral lessons, even to one who had no faith.

In the later years of his life, when his attention turned increasingly to anthropology as a means of reconstructing the past, it became more than ever clear that he had a very deep feeling for the lives of the simple people of Maharashtra. When he described local festivals, and religious ceremonies or showed the excellent colour slides that he had taken of them, one felt that he

would have liked to participate, to identify himself with the peasants worshipping at a village shrine or making a pilgrimage to Pandharpur. Once, when he was mildly complaining of the pains which the doctors seemed incapable of curing, it struck me suddenly that they might be psychologically caused, the product of the tension between the disbelief, to which his reason compelled him and the deep-seated traditions of his ancestral faith, which his reason had rejected but which still, in reason's spite, affected his semi-conscious and sub-conscious emotions. Very tentatively I made this suggestion to him, and advised him, as a psychologist of the Jungian school might have done, to go on a pilgrimage to Pandharpur and perform all the rituals of the ordinary pilgrim, even if he had no belief in them, in the hope that his health would improve. He laughed, and replied that he could not do this, however beneficial to his health, for thus he would betray his faith in reason and common sense.

Impatient with hypocrisy, inefficiency, bureaucracy, dogmatism and intolerance, a man of very deep convictions and strong principles, with a very powerful will, he may have made enemies as well as friends. Some may have found him difficult to collaborate with as a colleague. As a friend I found him always loyal, sympathetic and helpful. His company was invariably stimulating; he was never at a loss for a subject of conversation and he infected one with his own enthusiasm. It was with a deep sense of personal loss that I learnt of the death of my very good friend "Baba".

It is as a friend rather than as a scholar that I shall chiefly remember him, but this statement is in no way intended to disparage his scholarship. I am not qualified to pass judgment on his work in mathematics, and have hardly the right to assess his editions of Sanskrit poetical texts, which, according to the specialists, are marvels of their kind.

As a historian he made very important contributions to the study of many aspects of Indian history. His statistical analysis of the punch-marked coins has produced one of the most convincing interpretations of these so far to have been offered. His *An Introduction to the Study of Indian History* is in many respects an epoch making work, containing brilliantly original ideas on almost every page; if it contains errors and misrepresentations, if now and then its author attempts to force his data into a rather doctrinaire pattern, this does not appreciably lessen the significance of this very exciting book, which has stimulated the thought of thousands of students throughout the world. In his later publications he continued to point the way to the only means whereby we can reconstruct a convincing picture of the early history of India as a whole, rather than of the India of pundits and dynasties-by a judicious combination of the techniques of history, archaeology and anthropology.

In his stature, his intellect and his integrity of spirit, he was indeed a truly great man.

Damodar Dharmanand Kosambi

(31 July 1907-29 June 1966)

V. V. GOKHALE

Death overtook Professor D. D. Kosambi in his bed in the early hours of 29 June 1966 prematurely and almost surreptitiously, after he had been declared generally fit on the previous day by his family doctor. It was a case of myocardial infarct. A glance at, the accompanying list of his publications will bring home to us the serious loss the world of progressive and talented writers has suffered and the void his death has left among the leading savants of renascent India.

Born at Kosben in Goa, then under the rule of the Portuguese colonialists, Damodar Kosambi was brought up in a family known for its rigorous standards of learning and social behaviour. He had inherited from his father, the renowned Buddhist scholar Dharmanand Kosambi, an insatiable spirit of inquiry, a love of wandering and a sharp, versatile intellect, which took him quickly ahead of his co-workers and gave his views a rare sense of originality. After some schooling in India, his father, who had accepted a teaching assignment at Harvard (USA), took him to the Cambridge Latin School, where as a boy of eleven he dedicated himself to a student's hard life until after about eight years we see him emerging as a brilliant young graduate of the Harvard University in Mathematics, History and Languages. On returning to India he worked for a few years at the Banaras Hindu University and then at the Aligarh Muslim University before he decided to settle down in Poona in 1932 as Professor of Mathematics at the Fergusson College--a college known for its pioneering services in the field of national education and where his father had taught for many years and laid the foundations of Buddhist Studies in western India. It was during the crucial period of fourteen years he spent at this college; which be in lighter vein characterized as "Rama's exile into the wilderness", that Professor Kosambi carried on an incessant struggle for mastery in various fields of knowledge and laid the foundations of his greatness as a scholar and a thinker .

Endowed with a powerful and far-reaching imagination and an outstanding mathematical ability, Kosambi, who had concentrated his mind almost exclusively upon mathematical research up to 1939, was gradually led to use his abstract methods for obtaining new results in various branches of social sciences. He

began by applying statistical methods to Indian numismatics. He was seen weighing with the utmost precision and unremitting zeal thousands of punch-marked coins obtained from different museums in the country and thrashing out his data until he could establish their chronological sequence, forward convincing arguments regarding the economic conditions under which they could have been minted, and discover facts about the dynastic history of the pre-Mauryan period, based upon a wide study of the ancient literary sources and his new metrological findings. The more he examined the productive spirit working behind the panorama of Indian history, the more charmed he was by the manifold aspects of Indian culture, the past as well as the present. While giving mathematical precision to his ideas in the various branches of humanities, he turned almost instinctively to his Sanskrit inheritance. His frank and scholarly estimate of Bhartrhari's aphorisms and later of Vidyakara's anthology, *Subhasitaratnakosa*, was a standing testimony to his versatile genius and quick mastery of the latest advances in literary criticism. In these and other Indological shldies covering a wide range of subjects from the Vedic and the Epic to the classical literature of India he owed as much to Sukthankars prolegomena to the critical edition of the *Mahabharata* as to the most modern standards of criticism in the West.

Being deeply preoccupied with the entire field of knowledge as it were, it was no wonder that his mathematical lectures in the Fergusson College seemed to go well over the heads of the postgraduate candidates. That as a result of this Kosambi had to leave the college ought to open our eyes to the dangers involved in our borrowing an examination- ridden system and uninspiring standards of education in this country. The width of his comprehension and his penetrating researches, however, had been making their mark among the scientific circles of India and abroad. It was not long before he was offered the Chair for Mathematics in the Tata Institute of Fundamental Research. of Bombay in 1946, which he held for the next sixteen years. The new position offered him opportunities of developing closer contacts with scholars of his own calibre all over the world and of meeting his financial responsibilities better than before. Kosambi, however, could not relish the conditions under which he had to work. Living in his own house in the BORI Colony, Poona, he had to march every morning to the railway station and make the "Deccan Queen" his second home in order to attend to his duties in Bombay. Besides, a man of his temperament, solely dedicated to the pursuit of knowledge and social enlightenment, was entitled, he thought, to a freedom of thought and action, such as we hardly expect to meet with in an emergent society struggling for its economic independence. All the same, he was able now not only to give a final shape to some of his earlier studies, but also to launch upon new orientations in the fields of Biology, Ethnology, Archaeology and Prehistory. And every now and then we see him turning back from his study of the social sciences to the development of his research in the comparatively abstract or pure fields of

science: the last book he sent out for publication dealt with Prime Numbers. His last major work, *The Culture and Civilisation of Ancient India in Historical Outline* (London, 1965) , which has now come to be translated into several European and Asian languages, set the seal of recognition on his vast erudition, his ability to discover basic motives of human civilization and his brilliant powers of exposition.

It is not for us to estimate the scientific advances made by Professor Kosambi in the fields of Genetics, Statistics and Mathematics or the part played by him in various other spheres of activity, e.g., in his capacity as Member of the World Peace Council visiting the socialist countries of the East and the West. He believed in the Marxist method of interpreting and changing the human society, but did not hesitate to revise the data of Marx himself in the light of modern research. As an independent thinker with a passionate devotion to scientific research, he seemed to be almost exclusively preoccupied with his own intellectual pursuits. As such, he was sometimes accused of brusqueness and intolerance, but he had obviously no use, nor time for all the sophistications of our normal social life, nor could he afford to waste his energies on empty rituals and ceremonies, except for treating them as objects or his anthropological studies. And yet, whenever he found some time to relax, his childlike simplicity and sparkling wit were most refreshing even to those who were nearest to him and he spread laughter and sunshine around him. Towards his friends he was generous to a fault, his inner life was marked by an unmistakable streak of asceticism, while his ethical standards were unusually high and severe. Professor D. D. Kosambi deserves to be remembered as one of the highly gifted and versatile scientific workers and indefatigable scholars of modern India for whom a relentless search for the highest human values was the only natural way of life.

(Reprinted from the *Annals of the Bhandarkar Oriental Research Institute*, xlvi (Poona, 1967),118-30.)

BOOKS AND ARTICLES BY D. D. KOSAMBI

(Based on his notes)

I. Books

1. *An Introduction to the Study of Indian History* (Popular Book Depot, Bombay, 1956).
2. *Exasperating Essays: Exercise in the Dialectical Method* (People's Book House, Poona,1957)
3. *Myth and Reality: Studies in the Formation of Indian Culture* (Popular Prakashan, Bombay, 1962).

4. *The Culture and Civilisation of Ancient India in Historical Outline* (Routledge & Kegan Paul, London, 1965) .

II. Edited Works

1. *The Satakatrayam of Bhartrhari with the Comm. of Ramarsi*, edited in collaboration with Pt. K. V. Krishnamoorthi Sharma (Anandasrama Sanskrit Series, No.127, Poona, 1945), pp. 2+140+6+1.
2. *The Southern Archetype of Epigrams Ascribed to Bhartrhari* (Bharatiya Vidya Series 9, Bombay, 1946), pp. 176+ 13+8. (First critical edition of a Bhartrhari recension.)
3. *The Epigrams Attributed to Bhartrhari* (Singhi Jain Series 23, Bombay, 1948), pp. viii+82+240. (Comprehensive edition of the poet's work remarkable for rigorous standards of text criticism.)
4. *The Subhasitaratnakosa of Vidyakara*, edited in collaboration with V.V. Gokhale (Harvard Oriental Series 42, 1957)
5. *The Cintamani-saranika of Dasabala*; Supplement to *Journal of Oriental Research*, xix, pt, II (Madras, 1952) . viii+15, (A Sanskrit astronomical work which shows that King Bhoja of Dhara died in 1055-56.)

III. Articles

1. "Precessions of an Elliptical Orbit", *The Indian Journal of Physics*, v, pt. III (1930) , 359-64.
2. "On a Generalization of the Second Theorem of Bourbaki", *Proceedings of the Academy of Sciences*, UP, i (1931) (3 pages).
3. "Modem Differential Geometries", *The Indian Journal of Physics*, vii, pt. II (1932), 159-64.
4. "On the Existence of a Metric and the Inverse Variational Problem", *Proceedings of the Academy of Sciences*, UP, ii (1932), 17-28.
5. "Geometrie Differentielle et Calcul des Variations", *Rendiconti della R. Accademia Nazionale Dei Lincei*, xvi, Series 6 (1932) , 410-15.
6. "On Differential Equations with the Group Property", *Journal of the Indian Mathematical Society*, xix (1932), 215-19.
7. "Affin-geometrische Grundlagen der Einheitlichen Feld-theorie", *Sitzungsberichten der Preuss B. Akademie der Wissenschaften, Physikalisch-mathematische Klasse*, xxviii (1932), 342-45.
8. "The Classification of Integers", *Journal of the University of Bombay*, ii, pt. II (1933), 18-20.
9. "The Problem of Differential Invariants", *Journal of the Indian Mathematical Society*, xx (1933), 185-88.
10. "Parallelism and Path-spaces", *Mathematische Zeitschrift*, xxxvii (1933), 608-18.

11. "Collineations in Path-space", *Journal of the Indian Mathematical Society*, i (1934), 69-72.
12. "Continuous Groups and Two Theorems of Euler", *The Mathematics Student*, ii (1934), 94-100.
13. "The Maximum Modulus Theorem", *Journal of the University of Bombay*, iii, pt. II (1934), 11-12.
14. "Systems of Differential Equations of the Second Order", *The Quarterly Journal of Mathematics*, vi (Oxford, 1935), 1-12.
15. "Homogeneous Metrics", *Proceedings of the Indian Academy of Science*, i (1935), 952-54.
16. "An Affine Calculus of Variations", *Ibid.* ii (1935), 333- 35.
17. "Differential Geometry of the Laplace Equation", *Journal of the Indian Mathematical Society*, ii (1936), 141-43.
18. "Path-spaces of Higher Order", *The Quarterly Journal of Mathematics*, vii (Oxford, 1936), 97-104.
19. "Path-geometry and Cosmogony", *Ibid.* pp. 290-293.
20. "Les metriques homogenes dans les espaces cosmogoniques", *Comptes Rendus*, ccvi (Paris, 1938), 1086-88.
21. "Les espacts des paths generalises qu'on peut associer avec un espace de Finsler", *Ibid.* pp. 1538-41.
22. "The Tensor Analysis of Partial Differential Equations", *Journal of the Indian Mathematical Society*, iii (1939), 249-53.
23. "A Note on the Trial of Sokrates", *Fergusson College Magazine* (1939), pp. 1-6 (Sokrates and the class war of his day); Reprinted in *Exasperating Essays*.
24. "The Emergence of National Characteristics among Three Indo- European Peoples", *Annals of the Bhandarkar Oriental Research Institute*, xx, . pt. II (Poona, 1940), 195-206. (Trial speculation on Indology.)
25. (a) "The Function of Leadership in a Mass Movement";
 (b) "The Cawnpore Road", *Fergusson College Magazine* (1939-40), pp. 1-7 (A critique of dialectical- materialistic social theory; a story published under the pseudonym "Ahriman"); Reprinted in *Exasperating Essays*.
26. (a) "Revolution and the Progress of Science", *New Age*, v, 320-25. (A survey of the effects of the Revolution, upon Mathematics in the USSR);
 (b) "Science Learns the Goose-step", *Ibid.* pages unknown, as the Journal was suppressed soon after
27. "Path-equations Admitting the Lorentz (Group-I)", *Journal of the London Mathematical Society*, xv (1940), 86-91.
28. "A Statistical Study of the Weights of the Old Indian Punch-marked Coins", *Current Science*, ix (1940), 312- 14.
29. "A Note on Two Hoards of Punch-marked Coins Found at Taxila", *New Indian Antiquary*, iii (1940), 156-57.

30. "The Concept of Isotropy in Generalized Path-spaces", *Journal of Indian Mathematical Society*, iv (1940), 80-88. 31 ."
31. A Note on Frequency Distribution in Series", *The Mathematics Student*, viii (1940) , 151-55.
32. "On the Study and Metrology of Silver Punch-marked Coins", *New Indian Antiquary*, iv (1941), 1-35 and 49-76 (Numismatics as a science, with an application to its most difficult problem) ; (b) Additions and Corrections, *Ibid.* v (1942).
33. "A Bivariate Extension of Fisher's Z Test", *Current Science*, x (1941), 191-92.
34. "Correlation and Time Series", *Ibid.* pp. 372-74. 35 .
35. "The Quality of Renunciation in Bhartihari's Poetry". *Fergusson College Magazine* (1941). (A Study in Comparative Literature) .Republished with changes in *Bharatiya Vidya* (1946), pp. 49-62. Reprinted in *Exasperating Essays*.
36. "Path-equations Admitting the Lorentz (Group-II)", *Journal of the Indian Mathematical Society*, v (1941), 62-72.
37. "On the Origin and Development of Silver Coinage in India", *Current Science*, x (1941), 395-400. (Shows that the punch-marked coinage system developed from Mohenjodaro cut silver pieces.)
38. "On Valid Tests of Linguistic Hypotheses", *New Indian Antiquary*, v (1942), 21-24.
39. "Zeros and Closure of Orthogonal Functions", *Journol of the Indian Mathematical Society*, vi (1942), 16-24.
40. "The Effect of Circulation upon the Weight of Metallic Currency", *Current Science*, xi (1942), 227-31.
41. "A Test of Significance for Multiple Observations", *Ibid.* pp. 271-74.
42. "Progress in the Production and Consumption of Textile Goods in India", *Journal of Indian Merchants' Chamber* (Bombay, 1943) , pp. 11-15. Published as by "Vidyardhi" and Miss Sushila Gokhale.
43. "Race and Immunity in India", *New Indian Antiquary*, vi (1943), 29-33.
44. "Statistics in Function Space", *Journal of the Indian Mathematical Society*, vii (1943) , 76-88.
45. "Soviet Victory and the World Revolution", *Indo-Soviet Journal*, ii (7 November 1943), 6, (Shows that the theory of world revolution had not been abandoned by the USSR, as of that date.)
46. "The Estimation of Map Distance from Recombination Values", *Annals of Eugenics*, xii, pt. III (1944) , 172- 75.
47. "George David Birkhoff : 1884-1944" (Obituary) , *The Mathematics Student*, xii (1944), 116-20.
48. "Direct Derivation of Series, Spectra", *Current Science*, xiii (March 1944), 71.
49. "The Geometric Method in Mathematical Statistics", *American Mathematical Monthly* li (1944). 382-89.

50. "The Change in the Soviet Constitution", *Indo-Soviet Journal*, ii, no.9 (1944).
51. "Caste and Class in India", *Science and Society*, viii (1944) , 243-49. (Comment on an article by P. Rosas on the subject.) .
52. "Soviet Science: What Can It Teach Us?", *Indo-Soviet Journal*, 11-13 (22 June 1944).
53. "Parallelism in the Tensor Analysis of Partial Differential Equations", *Bulletin of the American Mathematical Society*, ti (1945) , 293-96.
54. "The Raman Effect" (Anonymous, as by an "Indian Scientist") , *People's Age* (22 July 1945) .
55. "Some Extant Versions of Bharatihari's Satakas", *Journal of the Bombay Branch of the Royal Asiatic Society*, xxi (1945),17-32.
56. "The Law of Large Numbers", *The Mathematics Student*, xiv (1946), 14-19.
57. "The *Parvasamgraha* of the *Mahabharata*", *Journal of the American Oriental Society'*, lxvi, no.2 (Baltimore, 1946) , 110-17; followed by the counts of E. D. Kulkarni, *Ibid.* 118-44. (First complete discussion of the problem and of V. S. Sukthankar's concept of a "fluid text").
58. "On the Authorship of the *Satakatrayi*", *Journal of Oriental Research*, xv (Madras, 1946) , 64- 77.
59. "Sur la Differentiation Covariante", *Comptes Rendu.v*, ccxxii (Paris, 1946), 211-13.
60. "Silver Punch-marked Coins with special reference to the East Khandesh Hoard", *Journal of the Numismatic Society of India*, viii (1946) , 63-66.
61. "Early Stages of the Caste System in Northern India", *Journal of the Bombay Branch of the Royal Asiatic Society*, New Series, xxii (1946) , 33-48.
62. "The Village Community in the 'Old Conquests' of Goa", *Journal of the University of Bombay*, xv, no.4 (1947),63-78
63. " An Extension of the Last-squares Method of Statistical Estimation", *Annals of Eugenics*, xiii (1947), 257-61.
64. "Some Applications of the Functional Calculus", Presidential Address to the Mathematics Section of the Indian Science Congress (Delhi, 1947). (Completely ruined in printing; no proof shown to the author.)
65. "Les Invariants Differentiels d'un Tenseur Covariant a deux Indices", *Comptes Rendus*, ccxxv (Paris, 1947) , 790-92.
66. "Early Brahmins and Brahminism", *Journal of the Bombay Branch of the Royal Asiatic Society*, xxiii (1947), 39-46.
67. "Systems of Partial Differential Equations of the Second Order", *Quarterly Journal of Mathematics*, xix (Oxford, 1948), 204-19.
68. "Chronological Order of Punch-marked Coins- I: A Re-examination of the Older Taxila Hoard", *Journal of the Bombay Branch of the Royal Asiatic Society*, xxiv.:xxv (1948-49), 33-47.
69. "The Avatarā Syncretism and Possible Sources of the *Bhagvad-Gita*", Third. pp. 121-34.

70. "Characteristic Properties of Series Distributions", *Proceedings of the National Institute of Science of India*, xv (1949), 109-13.

71. "Lie Rings in Path-space", *Proceedings of the National Academy of Science*, USA, xxxv (1949), 389-94.

72. "Marxism and Ancient Indian Culture" (As verse review of S. A. Dange's *India from Primitive Communism to Slavery*), *Annals of the Bhandarkar Oriental Research Institute*, xxix (Poona, 1949), 271-77.

73. "Differential Invariants of a Two-index Tensor", *Bulletin of the American Mathematical Society*, Iv, no. 2 (1949), 90-94.

74. "On the Origin of Brahmin Gotras", *Journal of the Bombay Branch of the Royal Asiatic Society*, xxvi (1950), 21-80.

75. "Series Expansions of Continuous Groups", *Quarterly Journal of Mathematics*, ii, no.2 (Oxford, 1951), 244-57.

76. "Chronological Order of Punch-marked Coins-II: The Bodenayakanur Hoard", *Journal of the Bombay Branch of the Royal Asiatic Society*, xxvi (1951), 214-18.

77. "Urvasi and Puniravas", *Journal of the Bombay Branch of the Royal Asiatic Society*, xxvii (1951), 1-30. Reprinted in *Indian Studies: Past & Present*, i, no.1 (Calcutta, 1959), 141-75, and in *Myth and Reality*.

78. "On a Marxist Approach to Indian Chronology", *Annals of the Bhandarkar Oriental Research Institute*, xxxi (Poona, 1951), 258-66.

79. "Seasonal Variations in the Indian Birth-rate" (in collaboration with S. Raghavachari) *Annals of Eugenics*, xvi (1951), 165-92.

80. "Imperialism and Peace", *Monthly Review*, iii (1951), 45-49.

81. "Parvasamgraha figures for the Bhisma Parvan" (in collaboration with E. D. Kulkarni), *Journal of the American Oriental Society*, Ixxi (Baltimore, 1951), 21-25.

82. "Path-spaces Admitting Collineations", *Quarterly Journal of Mathematics*, ii, no.3 (Oxford, 1952), 1-11.

83. "The Sanskrit Equivalents of Two Pali Words", *Annals of the Bhandarkar Oriental Research Institute*, xxxii (Poona, 1952), 53-60 (Gives the correct derivation of *sammapaso* and *vassakara*.)

84. "Path-Geometry and Continuous Groups", *Quarterly Journal of Mathematics*, ii, no.3 (Oxford, 1952), 307-20.

85. "Ancient Kosala and Magadha", *Journal of the Bombay Branch of the Royal Asiatic Society*, xxvii (1952), 180-213.

86. "Science and Freedom", *Monthly Review*, iv (1952), 200-05.

87. "Geldner's Rgveda", *Journal of Oriental Research* (Madras, 1952), pp. 291-95 (Essay review with special attention to words like *ibhya*).

88. "Chronological Order of Punch-marked Coins- III: The Palla Hoard", *Journal of the Bombay Branch of the Royal Asiatic Society*, xxvii (1952), 261-71,

89. "Brahmin Clans", *Journal of the American Oriental Society*. Ixxiii (Baltimore, 1953), 202-8. (Review and critique of J. Brough's book, *The Early Brahmanical System of Gotra and Pravara*. Cambridge, 1953. Mistaken for a polemic.)

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91. "The Periodization of Indian History", *ISCUS*, i (1954), 40-55. (Arbitrarily changed by the editors, without consulting the author.)

92. "Notes on the Class Structure of India", *Monthly Review*, vi (1954), 205-13. Reprinted in *Exasperating Essays*.

93. "The Metric in Path-space", *Tensor*, New Series, iii (1954), 67-74.

94. "What Constitutes Indian History?", *Annals of the Bhandarkar Oriental Research Institute*, xxxv (Poona, 1955), 194-201. (Essay review of the first three volumes of the Bhartiya Vidyā Bhavan's *The History and Culture of the Indian People*.)

95. "The Basis of Ancient Indian History-I", *Journal of the American Oriental Society*, lxxv, no.1 (Baltimore, 1955), 35-45.

96. "The Basis of Ancient Indian History-II", *Ibid.* no.4 (1955), 226-37.

97. "The Working Class in the *Amarakosa*", *Journal of Oriental Research*. xxiv (Madras, 1955), 57-69. (Shows the existence of a hierarchical principle in the *Amarakosa* classification.)

98. "On the Development of Feudalism in India", *Annals of the Bhandarkar Oriental Research Institute*, xxxvi, pts. III-IV (Poona, 1956), 258-69. (Adverse critique of Soviet Professor K. A. Antonova's theories.)

99. "Origins of Feudalism in Kashmir", *Journal of the Bombay Branch of the Royal Asiatic Society*. (The Sardhasatabdi Commemoration Volume, 1804-1954, Bombay, 1956-57), pp. 108-20.

100. "Dhenukakata", *Journal of the Bombay Branch of the Royal Asiatic Society*, xxx, pt. II (1957), 50-71. (Identification of the ancient Greek colony in Maharashtra. Also, complete text and translation of all known Brahmi inscriptions in Maval caves, including one from Karle hitherto unpublished. The first photograph of the Sphinx on a Karle pillar.)

101. "The Basis of Despotism", *Economic Weekly* (Bombay, 2 November 1957), pp. 1417-19. (Review of K. A. Wittfogel's *Oriental Despotism*.)

102. "Indo-Ariiskii Nosovoi Ukazatel", *Sovetskaya Etnografia* (Ak. Nauk. USSR), no.1 (1958), 39-57. (Demonstrates the unreliability of nasal-index data in theorizing about Indian racial groups.)

103. "Classical Tauberian Theorems", *Journal of the Indian Society of Agricultural Statistics*, x, nos. 1-2 (1958), 141-49.

104. "The Efficiency of Randomization by Card Shuffling" (in collaboration with U.V.R. Rao), *Journal of Royal Statistics Society*, cxxi, no.2

(1958), 223-33. (Analysis of statistical defects underlying para-psychological experiments.)

105. "The Text of the *Arthashastra*", *Journal of the American Oriental Society*, Ixxviii, no.3 (Baltimore, 1958), 169-73. (Shows that about a quarter of the original work is lost, but more or less uniformly over the whole text.)
106. "The Method of Least Squares", *Journal of the Indian Society of Agricultural Statistics*, xi, nos. 1-2 (1959), 49-57.
107. "Notes on the Kandahar Edict of Asoka", *Journal of the Economic and Social History of the Orient*, ii (Leiden, 1959), 204-06.
108. "China's Communes", *Monthly Review*, x (1959), 425-29. 109.
109. "Primitive Communism", *New Age* (Monthly), viii, no.2 (February 1959), 26-39. (First treatment of "Communism" in primitive society, without idealisation of ethnographic data.)
110. "Indian Feudal Trade Charters", *Journal of the Economic and Social History of the Orient*, ii, pt. III (Leiden, 1959), 281-93. (Special treatment of the Visnusena Charter of A.D. 592, correcting D. C. Sircar's gruesome mistakes.)
111. "An Application of Stochastic Convergence", *Journal of the Indian Society of Agricultural Statistics*, xi (1959), 58-72.
112. "At the Cross-roads: Mother Goddess Cult Sites in Ancient India", *Journal of the Royal Asiatic Society* (London, 1960), 17-31; 135-44.
113. "Social and Economic Aspects of the *Bhagavad-Gita*", *Journal of the Economic and Social History of the Orient*, iv, pt. II (Leiden, 1961), 198-224. (Revision of an article originally published in *Enquiry*, ii (1959), 1-20. Reprinted in *Myth and Reality*.)
114. "Kaniska and the Saka Era", *Marg* (April 1962); also *Journal of the Bombay Branch of the Royal Asiatic Society*, xxxv (1962), 36-37, (Identifies Kaniska I with Soter Megas and Kaniska II with the king of the coins.)
115. "Pierced Microliths from the Western Deccan Plateau", *MAN* (January 1962), nQte 4, pp. 10-12. (Apparently the first announcement of such microliths.)
116. "Megaliths in the Poona District", *MAN* (May 1962), note 108, pp. 65-67+plate.
117. "The Sampling Distribution of Primes", *Proceedings of the National Academy of Sciences* (USA), xlvi (1963), 20-23.
118. "Combined Methods in Indology", *Indo-Iranian Journal*, vi (1963), 177-202. (By special invitation of the editors; shows that philology, history, archaeology and anthropology have to be combined to get valid results in any one of these fields, which treated in isolation, leads to wrong conclusions otherwise.)
119. "Prehistoric Rock Engravings near Poona", *MAN* (1963), note 60, pp. 57-58.

120. "Staple Grains' in the Western Deccan", *MAN* (1963), note 156, pp. 30-31.
121. "The Beginning of the Iron Age in India", *Journal of the Economic and Social History of the Orient.* vi, pt. III (Leiden, 1963), 309-18 (Places this important change at about 800-700 B.C.. much earlier than D. H. Gordon and Mortimer Wheeler would have it.)
122. "The Autochthonous Element in the *Mahabharata'* *Journal of the American Oriental Society.* lx.xxiv (Baltimore, 1964), 31-44.
123. "The Historical Krishna", *Times of India Annual* (1965), pp. 27-36.
124. "Numismatics as a Science", *Scientific American* (February 1966), pp. 102-11.
125. "Living Prehistory in India", *Ibid.* (February 1967). Re- printed in *The American Review* (October 1967) .
126. "Adventure into the Unknown", *Current Trends in Indian Philosophy.* ed. K. S. Murty and K. R. Rao (Asia Publishing House, Bombay, 1972), pp. 152-67. (A note on the writer's personal philosophy as a scientist and research worker.)
127. "Prime Numbers", Monograph completed a few days before the author's death.